

THURSDAY, SEPTEMBER 9, 1886

## THE ECLIPSE EXPEDITION

NOTHING could have exceeded the magnificent manner in which the authorities of Grenada, and chiefly His Excellency Governor Sendall, and the commanders of the ships detailed to assist the Expedition—Her Majesty's ships *Fantôme*, *Bullfrog*, and *Sparrowhawk*—have met the wishes of, and lent assistance to, the Expedition.

As a consequence, at this time of writing (August 20) all the observers, with the exception of the Chief of the Expedition, are at their posts, with huts and instruments erected, and as much skilled assistance as they can possibly desire. The stations actually occupied so far are as follows:—

(1) Carriacou. Rev. S. J. Perry and Mr. Maunder. This party has the *Bullfrog*, two officers of which will assist, as well as Lieut. Helby of the *Sparrowhawk*.

(2) Boulogne. Prof. Tacchini and Mr. Turner. Lieut. Smith, of the *Sparrowhawk*, and a petty officer and skilled artificer, assist this party.

(3) Hog Island. Prof. Thorpe. The *Fantôme* is anchored near the observing-station, and Prof. Thorpe will have the assistance of the officers.

(4) Prickly Point. Capt. Darwin and Dr. Schuster. One or two officers of the *Fantôme*, and Capt. Maling, the Colonial Secretary, assist this party.

The fifth station, to be eventually occupied by Mr. Lockyer, is at Green Island, at the north-east corner of Grenada. Capt. Oldham, of the *Sparrowhawk*, Mr. Beresford (the Clerk of the Council), the Chief of the Police, Mr. Wright, and Dr. Boyd will assist him.

The parties at Boulogne, Prickly Point, and Green Island occupy houses which have been placed at the disposal of the Expedition by Col. Duncan, Mr. Chadwick (the Treasurer of the Island), and Mr. Belton respectively; nothing can exceed the kindness which the Expedition has received, and the assistance rendered has been so effectual, that so far everything has gone without a hitch. The labours of the Governor in the cause of the Expedition have been unceasing; he planned a hut and sent a model to Barbados, and when it was approved (by telegraph) he had four ready awaiting the arrival of the parties, which were thus enabled to proceed at once to their stations.

The weather chances are doubtful, but certainly they have improved since the arrival of the Expedition. The observations of the local cloud conditions have been so continuous lately, not only by the observers themselves, but by many at the request of the Governor before the arrival of the Expedition, that there is no question that the best stations are occupied, and it is a matter of general satisfaction that Carriacou has been added to the line of stations. The local idea is that the hurricane which passed over St. Vincent—and so nearly over Grenada!—last Monday has cleared the air, as it has been noticed that spells of fine weather generally follow them.

The *Fantôme* comes in on Sunday to convey the Green Island party to their station; although this will leave very

little time for the party to establish itself, it has been considered desirable to leave the southern observers undisturbed as long as possible. The Governor and Mr. Lockyer will proceed in her to Carriacou to inspect the station there, while the hut and instruments are being erected at Green Island. The last week has been spent here in erecting and dismounting the instruments and overhauling everything, so that no time will be lost at the station itself.

There are photographic difficulties ahead: with the ordinary plates brought out here, the film simply disappears in the developer in consequence of the usual temperature of the water, about 80°. The Germans and Americans are now supplying plates here which stand this temperature easily, but they do not seem to be known in England. It looks very much as if it will be safer to take some if not all of the photographs obtained—if any are obtained—to be developed at home.

The Expedition will arrive in England on September 18. St. George, Grenada

THE ZOOLOGICAL RESULTS OF THE  
"CHALLENGER" EXPEDITION

*Report on the Scientific Results of the Voyage of H.M.S. "Challenger" during the Years 1873-76 under the Command of Capt. G. S. Nares, R.N., F.R.S., and Capt. F. T. Thomson, R.N.* Prepared under the Superintendence of the late Sir C. Wyville Thomson, F.R.S., &c., and now of John Murray, one of the Naturalists of the Expedition. Zoology—Vol. XIV. By Prof. W. A. Herdman, and Hjalmar Thél. (Published by Order of Her Majesty's Government, 1886.)

VOLUME XIV. of the Zoological Series of these Reports contains Parts 38 and 39. Part 38 forms the second part of Prof. W. A. Herdman's Report on the Tunicata collected by the Expedition. It will be remembered that the first part was published in 1882, and that it treated of the Simple Ascidians. The Compound Ascidians are described in the present Report, and the free-swimming or pelagic forms will form a third and concluding Report. The Compound Ascidians have always been regarded by biologists as a most difficult group to describe. The impossibility of finding good diagnostic characters in external markings or general contour compels the investigator to search for such in minute internal structure—a laborious proceeding, and one that up to this had had no practical illustration. The large collection of Compound Ascidians made during the Expedition represented 102 species or well-marked varieties, and these are arranged in twenty-five genera. Eighty-eight of the species and ten of the genera are described here for the first time, and two new families have been established.

The families and genera seem to be uniformly distributed, but they are more numerous in the southern than in the northern hemisphere; indeed, the Compound Ascidians, like the Simple Ascidians, attain their greatest numerical development in the southern temperate zone. The Botryllidæ appear to be confined to the northern hemisphere, having there a very wide range. The Distomidæ are well represented in both hemispheres. The Polyclinidæ almost exclusively belong to the

southern hemisphere. The Diplosomidae are from tropical seas. The family of the Coelocormidae is only known from the southern hemisphere. In the Didemnidae the genera are well represented in both hemispheres, while in that of the Polystyelidae the southern and northern forms belong to different genera.

The Compound Ascidians are not deep-sea forms. While between shore-mark and a depth of 50 fathoms over 60 species and varieties were found, but 12 species were met with at depths between 100 and 250 fathoms; 4 species extended to a depth of 500; 7 species to a depth of 1000 fathoms; and one strange form, *Pharyngodictyon mirabile*, was found at a depth of 1600 fathoms. While as a matter of course the shallow-water forms have been better known from being so much more easily collected than the deep-sea species, still Prof. Herdman seems amply justified in his conclusions that the Compound Ascidians are essentially "a shallow-water group, that they are abundant around coasts in a few fathoms of water, and that they rapidly decrease in numbers as greater and greater depths are reached."

As to the phylogeny of the group, the author has come to the conclusion that the Compound Ascidians are polyphyletic in origin, being made up of several branches which at differing periods have arisen from the Simple forms.

As introductory to the description of new genera and species, we find a very complete and most instructive chapter devoted to the history, bibliography, and anatomy of the group. The general anatomical details are illustrated by some excellent woodcuts. The details of the anatomy of the various species are given in connection with their description, and are largely illustrated on the forty-nine plates drawn by Prof. Herdman which accompany the memoir. The investigation of the Ascidians, despite the existence of some few brilliant memoirs, is now for the first time done justice to; and, while we congratulate the author on his excellent work, we recognise in it not only an elaborate Report, but in addition a monograph of a, to this, very imperfectly known group.

Part 39 is a Report on the Holothuroidea, by Hjalmar Théel, Part 2. In the second portion of this Report on these soft-bodied Echinoderms, Théel has not rested satisfied with giving a description only of the new forms of the groups Apoda and Pedata, which were brought home by the Expedition, but he has added a series of short accounts of all the forms known, even quoting the doubtful or little-known forms. Thus we have in this report also a veritable monograph of another most interesting group. Although unable to say much as to the bathymetrical distribution of these forms, still the *Challenger* dredgings have added many facts to our previous knowledge. Up to 1872 very few forms were known from depths exceeding 100 fathoms, and scarcely one from below 200 fathoms. Now we know of a number of forms met with at a depth of 500 fathoms, and these are generally distinct from shallow-water forms though belonging to the same genera. Several species have a vast bathymetrical distribution, some individuals still living near the shore, while others have descended without any notable change to depths of from 5 to 700 fathoms. Some few belong to genera that have no representatives in depths shallower than 500 fathoms. Among the very deep-sea

forms we find *Cucumaria abyssorum*, at a depth of from 1500 to 2223 fathoms; *Synapta abyssorum*, at a depth of 2350 fathoms; *Pseudostichopus villosus*, at a depth of 1375 to 2200 fathoms; and the deepest-living of all the forms, *Holothuria thomsoni*, at a depth of from 1875 to 2900 fathoms. Some fifty-three new species or strongly-marked varieties are described and figured. A valuable bibliography is annexed. Many imperfectly-described species have been re-described from fresh specimens, thus rendering this Report of immense value to the working zoologist.

#### OUR BOOK SHELF

*Miscellaneous Papers relating to Indo-China.* 2 Vols. Trübner's Oriental Series. (London: Trübner and Co., 1886.)

IN Oriental matters, more than in any other branch of investigation, the student is beset at every step by the difficulty of knowing what has been done already, for, besides books and papers published in London and other European capitals (which are accessible enough), there are those published in the East itself by numerous Societies as well as private individuals. In addition, many of the *Journals* and *Proceedings* of Societies to which the student would desire to refer are long since out of print, and many of them fetch a very high price indeed. Such are the *Chinese Repository*, the *Oriental Repertory*, Logan's *Journal of the Indian Archipelago*, and many others that could be named. In London these can be consulted at the British Museum, at the libraries of the India Office and the Royal Asiatic Society, and perhaps elsewhere; but this is of little service to the student elsewhere in the British Islands, and still less to one who is working in the very field itself, in the Malay Peninsula, Java, Borneo, Bangkok, or China. Occasionally, an enterprising Society or publisher may republish some of these old papers, but this is not often done, for the number of immediate buyers is necessarily small, and the return therefore slow and doubtful.

Recent events in various parts of Further India, including in this term that part of Asia west of Burmah and south of China, have attracted the public mind to these regions. Accordingly, the Straits Branch of the Royal Asiatic Society, which has its seat at Singapore, decided to publish a first instalment of papers relating to Indo-China, but mainly to the Malay Archipelago, scattered about in various periodicals now beyond the reach of most students, and out of the question for those who are unable to consult large libraries. A selection of papers was made by officers of the Society in Singapore; these were carefully edited by Dr. Rost, the Librarian of the India Office, and the work was fortunate in being placed in Messrs. Trübner's Oriental Series—a series of works which, whether we regard individual excellence or the range of Oriental knowledge which it embraces, stands unrivalled in the world, for in every direction it forms the high-water mark of European study of the East. The present volumes include selections from the papers published in Dalrymple's *Oriental Repertory*, the old *Asiatic Researches*, and the *Journal* of the Asiatic Society of Bengal. It may be hoped that the Society will feel able and willing to continue the issue of similar selections from other sources. The papers commence about 1808, and the latest are dated about 1860, and they embrace almost every subject of interest relating to the East. Some of the earlier reports are now of merely historical interest, such as Topping's account of Keddah, Barton's surveys and description of Balambangan, and the history of the formation of the East India Company's establishment at Penang. But others are of more value. There are numerous descriptions of various economic products, as